



## Principles of oral biopsy: part I

Lieutenant Gretchen Folk, DC, USN, Captain Duane Schafer, DC, USN, Commander David Bitonti, DC, USN,  
and Commander James Castle, DC, USN

### Patient examination

Oral lesions must be identified and appropriately characterized so that specific therapy, if warranted, can be initiated, leading to resolution of the lesion. When a lesion is detected, several steps should be undertaken to aid in the formation of a differential diagnosis. These steps include reviewing the health history of the patient, history or timeline of the specific lesion, clinical and/or radiographic appearance, as well as any appropriate laboratory studies.

### Health history and history of the lesion

An adequate health history is important because a preexisting medical condition may affect the clinician's proposed treatment of the patient or be contributory to the lesion's occurrence. Additionally, the lesion may represent an oral manifestation of a previously undetected systemic disease, thus leading to early intervention, and possibly life-saving therapy. In order to obtain a complete history of the lesion, the patient should be asked a few essential questions.

- How long has the lesion been present?
- Has the lesion changed in size?
- Has the lesion changed in character? (Newly ulcerated, rolled border, indurated, etc.)
- What symptoms are associated with the lesion? If painful, what is the character of the pain? What exacerbates and what diminishes the pain?
- Is there any historic reason for the presence of the lesion? (History of trauma to the area, use of a new intraoral product, recent intraoral procedure, etc.)

A rapidly growing lesion, present for a short period of time, which is accompanied by pain may be an indicator that this lesion is more likely to be a malignant process. In contrast, a slow-growing lesion, which has been present for many months, may represent a more benign process. It is also important to note any change in the character of the lesion. For example, if a patient presents with an ulcer but states that it began as a vesicle, a vesiculobullous or viral disease may be suspected.

Symptoms that may be associated with oral lesions include: pain, anesthesia, dysphagia, bad taste or smell, and swelling or tenderness of adjacent lymph nodes. Hypoesthesia or dyesthesia associated with the distribution of one of the sensory nerves may indicate an inflammatory or malignant process (1). In general, tender lymph nodes indicate an inflammatory or infectious origin.

Frequently, lesions in and around the oral cavity are caused by oral habits, hard or hot foods, application of medicaments not intended for topical use, or recent trauma. The dentition adjacent to an oral lesion should also be examined as a potential cause for the presenting lesion (fractured cusp, rough occlusal surfaces, malposed occlusion, etc.).

### Clinical examination

When an oral lesion is discovered, it is very important to perform a thorough examination of the area around the lesion, including the regional lymph nodes. A detailed description, measurement, and/or drawing of the lesion would be helpful in allowing the dentist to follow the course of the lesion over time and to facilitate his or her ability to determine whether it is resolving or changing character. Digital or conventional photography can also be a valuable tool in documenting change. When clinically assessing any lesion, the following points are important to evaluate:

- Anatomic location of the mass
- Overall physical characteristics of the lesion to include size and shape (giving the diameter in centimeters)
- Single versus multiple lesions
- Surface texture or contour of the lesion
- Color of the lesion
- Boundary characteristics of the lesion (sharp, well-defined, ill-defined, etc.)
- Consistency of the lesion on palpation (soft, doughy, fluctuant, indurated, etc.)
- Presence of intralesional pulsation and character of the pulsation
- Lymph node examination (movable, fixed, matted, soft, hard, firm, not palpable)

When submitting an intraosseous tissue specimen, it is also critical to include a radiograph with the biopsy sample. A benign cyst usually appears as a radiolucency with sharply demarcated radiographic borders. Conversely, an ill-defined, ragged radiolucency may indicate a more aggressive lesion, possibly a malignancy. When evaluating an intraosseous lesion, it is essential to determine whether the lesion is in fact a normal anatomic structure or an artifact of the radiograph itself.

Several oral lesions may be manifestations of systemic diseases and may warrant laboratory analysis. In most instances, laboratory investigations are unnecessary in evaluation of oral lesions because alone they are generally non-diagnostic. However, laboratory analysis may be indicated once a microscopic diagnosis is rendered from a biopsy specimen. For example, a microscopic diagnosis of central giant cell lesion may represent a solitary idiopathic presentation (nonsystemic lesion), or may be the result of hyperparathyroidism. In this instance, the dentist should determine serum parathyroid hormone and calcium levels in attempt to rule out the chance that the lesion is a manifestation of a systemic disease.

### **Definition and purpose of biopsy**

Biopsy is defined as the “process of removing tissue from patients for diagnostic examination” (2). Biopsy is not merely a surgical technique for oral lesions, but it entails a total patient management philosophy, including:

- Adequate data collection
- Competent diagnostic skills
- Proper surgical management
- Evaluation and interpretation of the pathology report
- Comprehensive patient follow-up

The purpose for biopsy is to allow microscopic analysis of the tissue to determine whether a lesion is an inflammatory, reactive, systemic, or neoplastic process. If neoplastic, a biopsy is further used to determine whether the tumor is benign or malignant, and if malignant, the tumor type and grade is identified to determine the prognosis. A biopsy is essential in formulating a specific treatment plan for patients with oral lesions (1).

### **Indications for biopsy**

Prior to any biopsy procedure, the dentist should compile a differential diagnosis. The data obtained from the history and clinical examination usually provide enough information for a differential diagnosis. The following is a list of indications for tissue removal and microscopic examination (3).

- Any lesion that persists for more than 2 weeks with no apparent etiologic basis

- Any inflammatory lesion that does not respond to local treatment after 10-14 days (following removal of the local irritant)
- Persistent hyperkeratotic changes (white patches) in surface tissues
- Any persistent tumescence, either visible or palpable beneath normal tissue
- Persistent inflammatory changes of unknown origin
- Lesions that interfere with local function (i.e. mucocoele or fibroma)
- Bone lesions not specifically identified by clinical and radiographic findings
- Any lesion that has the characteristics of malignancy (erythroplasia, ulceration, rapid growth rate, duration greater than 2 weeks, bleeding with gentle manipulation, induration, and fixation)
- Any tissue that is surgically removed that has the potential of being diseased tissue

We will examine the preparation and steps for the biopsy procedure itself in Part II of this series.

### **References**

1. Morton TH, Whitacre RJ, Gehrig JD. A self-instructional guide, principles of biopsy. 3rd ed. Seattle: Stoma Press; 1983.
2. Stedman TL. Stedman's medical dictionary. 27th ed. Philadelphia: Lippincott Williams & Wilkins; 2000.
3. Peterson LJ. Contemporary oral and maxillofacial surgery. 3rd ed. St. Louis: Mosby; 1998.

Dr. Gretchen Folk is a resident in the Oral and Maxillofacial Pathology Department, Dr. Schafer is Chairman of the Oral and Maxillofacial Pathology Department, Dr. Bitonti is Chairman of the Oral Surgery Department, and Dr. Castle is a staff oral pathologist at the Naval Postgraduate Dental School.

The opinions and assertions contained in this article are the private ones of the authors and are not to be construed as official or reflecting the views of the Department of the Navy.